

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/24683

**A. CLASSIFICATION OF SUBJECT MATTER**  
 IPC(7) : B05D 1/2, 3/02, 3/04, 3/06, 5/00; C23C 14/24, 14/32; B01D 131/20, 135/00  
 US CL : 427/247, 229, 576, 533, 554, 576, 596, 309, 328; 148/519, 525; 428/34.1, 586, 613, 617, 668, 673; 96/10, 11; 95/56

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
 U.S. : Please See Continuation Sheet

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
 EAST, Inventor Name Search in PALM

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6,152,987 A (MA et al) 28 November 2000 (28/11/00), see the abstract; figure 1; col. 1, lines 21-col. 7, line 40, esp. col. 1, lines 21-60; col. 2, lines 25-65; col. 5, lines 51-60+; and col. 7, lines 10-40.	1, 3-5, 8, 11, 13, 15-16, 27-31, 36-37, 39-46 and 49
Y		2, 6-7, 9-10, 17-26, 32-35, 38, 47-48
X	US 5,782,960 A (OGAWA et al) 21 July 1998, (21/07/98), see the abstract; figures, esp. 2; col. 2, lines 54-63+; col. 3, lines 7-30; col. 4, lines 3-10; col. 5, lines 8-22 and 45-col. 6, line 46.	1, 3-5, 11, 13, 15-18, 29-31, 36-47, 49
P, X	US 2004/0244589 A1 (BOSSARD et al) 09 December 2004 (09/12/04), see the abstract; figures, esp. 5-9; [0018-19]; [0041-51]; [0060-71], esp. [0063], [0066], [0068].	1, 3-5, 7, 13-18, 29-31, 16-47, 49
P, Y		19-28
Y	US 2001/0016236 A1 (HU) 23 August 2001 (23/08/01), see the abstract; [0005-7]; [0009-11]; [0016], [0018-19]; [0024-0026]; [0028-29]; [0031]; [0034-35].	1-5, 15-26, 29-31, 36-47
X	US 6,527,833 B1 (OYAMA et al) 04 March 2003 (04/03/03), see the abstract; figures; col. 2, line 49-col. 3, lines 22 and 65-col. 4, line 10; col. 53-68; col. 7, line 22-col. 8, line 40 and col. 10, lines 44-47.	1, 4, 13-16, 27-28



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier application or patent published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

29 April 2005 (29.04.2005)

Date of mailing of the international search report

31 MAY 2005

Name and mailing address of the ISA/US

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International application No.  
PCT/US04/24683

## C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6,214,090 B1 (DYE et al) 10 April 2001 (10/04/01), see the abstract; col. 1, lines 10-17 and 36-col. 2, line 45; col. 3, line 11- col. 4, line 55.	5-10 and 32-35
Y	US 5,738,708 A (PEACHEY et al) 14 April 1998 (14/04/98), see the abstract; col. 2, line 36-col. 4, line 15.	5-10 and 32-35
Y	US 6,077,621 A(ALLEN et al) 20 June 2000 (20/26/00), see the abstract; col 1, lines 10-20; col. 3-5.	5-10 + 32-35

# INTERNATIONAL SEARCH REPORT

International application No.  
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## Continuation of B. FIELDS SEARCHED Item 1:

427/229, 245, 247, 250, 309, 327, 328, 533, 554, 555, 556, 561, 566, 576, 596, 597; 148/514, 519, 520, 521, 525, 527; 428/34.1, 34.6, 35.8, 35.9, 36.6, 36.7. 586, 613, 617, 668, 669, 673; 96/10, 11; 55/524; 95/56

**Box No. VIII (iv) DECLARATIONS: INVENTORSHIP** (only for the purposes of the designation of the United States of America)  
*The declaration must conform to the following standardized wording provided for in Section 214; see Notes to Boxes Nos. VIII, VIII (i) to (v) (in general) and the Specific Notes to Box No. VIII (iv). If this Box is not used, this sheet should not be included in the request.*

**Declaration of inventorship (Rules 4.17(iv) and 516a.1(a)(iv))  
 for the purposes of the designation of the United States of America:**

I hereby declare that I believe I am the original, first and sole (if only one inventor is listed below) or joint (if more than one inventor is listed below) inventor of the subject matter which is claimed and for which a patent is sought.

This declaration is directed to the international application of which it forms a part (if filing declaration with application).

This declaration is direct to international application No. PCT/\_\_\_\_\_ (if furnishing declaration pursuant to Rule 26ter)  
 entitled:

**METHODS FOR PROVIDING THIN HYDROGEN SEPARATION MEMBRANES AND ASSOCIATED USES**

I hereby declare that my residence, mailing address, and citizenship are as stated next to my name.

I hereby state that I have reviewed and understood the contents of the above-identified international application, including the claims of said application. I have identified in the request of said application, in compliance with PCT rule 4.10, any claim to foreign priority, and I have identified below, under the heading "Prior Applications," by application number, country or Member of the World Trade Organization, day month and year of the filing, any application for a patent or inventor's certificate filed in a country other than the United States of America, including any PCT international application designating at least one country other than the United States of America, having a filing date before that of the application on which foreign priority is claimed.

Prior Applications: \_\_\_\_\_

I hereby acknowledge the duty to disclose information this is known by me to be material to patentability as defined by 37 C.F.R. § 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the PCT international filing date of the continuation-in-part application.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

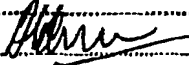
Name: Anand Chellappa .....

Residence: Albuquerque, New Mexico .....  
 (city and either US state, if applicable, or country)

Mailing Address: 8909 Opportunity Dr. NE .....

Albuquerque, New Mexico 87109 .....

Citizenship: India .....

Inventor's Signature:  .....

Date: 8/3/04 .....

(if not contained in the request, or if declaration is corrected or added under Rule 26ter after the filing of the international application. The signature must be that of the inventor, not that of the agent)

(of signature which is not contained in the request, or of the declaration that is corrected or added under Rule 26ter after the filing of the international application)

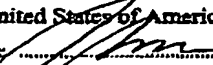
Name: Tom Vencill .....

Residence: Albuquerque, New Mexico .....  
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Mailing Address: 4916 Summer Ave .....

Albuquerque, New Mexico 87110 .....

Citizenship: United States of America .....

Inventor's Signature:  .....

Date: 8/11/04 .....

(if not contained in the request, or if declaration is corrected or added under Rule 26ter after the filing of the international application. The signature must be that of the inventor, not that of the agent)

(of signature which is not contained in the request, or of the declaration that is corrected or added under Rule 26ter after the filing of the international application)

☐ This declaration is continued on the following sheet, "Continuation of Box VIII (iv)".  
 Form PCT/RO/101 (declaration sheet (iv)) (March 2001)

See Notes to the request form

**Continuation of Box No. VIII (i) to (v) DECLARATION**

If the space is insufficient in any of Boxes Nos. VIII (i) to (v) to furnish all the information, including in the case where more than two inventors are to be named in Box No. VIII (iv), in such case, write "Continuation of Box No. VIII ..." (Indicate the item number of the Box) and furnish the information in the same manner as required for the purposes of the Box in which the space was insufficient. If additional space is needed in respect of two or more declarations, a separate continuation box must be used for each such declaration. If this Box is not used, this sheet should not be included in the request.

Name: Doyle Miller

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W. Z. Miller  
Inventor's SignatureDate: 8/3/04